National Institute of Environmental Health Sciences

Health effects of drought: A systematic review of the evidence

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Abstract:

Introduction. Climate change projections indicate that droughts will become more intense in the 21 century in some areas of the world. The El Niño Southern Oscillation is associated with drought in some countries, and forecasts can provide advance warning of the increased risk of adverse climate conditions. The most recent available data from EMDAT estimates that over 50 million people globally were affected by drought in 2011. Documentation of the health effects of drought is difficult, given the complexity in assigning a beginning/end and because effects tend to accumulate over time. Most health impacts are indirect because of its link to other mediating circumstances like loss of livelihoods. Methods. The following databases were searched: MEDLINE; CINAHL; Embase; PsychINFO, Cochrane Collection. Key references from extracted papers were hand-searched, and advice from experts was sought for further sources of literature. Inclusion criteria for papers summarised in tables include: explicit link made between drought as exposure and human health outcomes; all study designs/methods; all countries/contexts; any year of publication. Exclusion criteria include: drought meaning shortage unrelated to climate; papers not published in English; studies on dry/arid climates unless drought was noted as an abnormal climatological event. No formal quality evaluation was used on papers meeting inclusion criteria. Results. 87 papers meeting the inclusion criteria are summarised in tables. Additionally, 59 papers not strictly meeting the inclusion criteria are used as supporting text in relevant parts of the results section. Main categories of findings include: nutrition-related effects (including general malnutrition and mortality, micronutrient malnutrition, and anti-nutrient consumption); water-related disease (including E coli, cholera and algal bloom); airborne and dust-related disease (including silo gas exposure and coccidioidomycosis); vector borne disease (including malaria, dengue and West Nile Virus); mental health effects (including distress and other emotional consequences); and other health effects (including wildfire, effects of migration, and damage to infrastructure). Conclusions. The probability of drought-related health impacts varies widely and largely depends upon drought severity, baseline population vulnerability, existing health and sanitation infrastructure, and available resources with which to mitigate impacts as they occur. The socio-economic environment in which drought occurs influences the resilience of the affected population. Forecasting can be used to provide advance warning of the increased risk of adverse climate conditions and can support the disaster risk reduction process. Despite the complexities involved in documentation, research should continue and results should be shared widely in an effort to strengthen drought preparedness and response activities.

Source: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3682759

Resource Description

Early Warning System: ☒

resource focus on systems used to warn populations of high temperatures, extreme weather, or other elements of climate change to prevent harm to health

A focus of content

Exposure :

weather or climate related pathway by which climate change affects health

Air Pollution, Extreme Weather Event, Food/Water Quality, Human Conflict/Displacement, Temperature

Air Pollution: Dust

Extreme Weather Event: Drought, Wildfires

Food/Water Quality: Biotoxin/Algal Bloom, Chemical, Pathogen

Temperature: Extreme Heat

Geographic Feature:

resource focuses on specific type of geography

None or Unspecified

Geographic Location:

resource focuses on specific location

Global or Unspecified

Health Impact:

specification of health effect or disease related to climate change exposure

Cancer, Infectious Disease, Injury, Malnutrition/Undernutrition, Mental Health/Stress, Morbidity/Mortality

Infectious Disease: Airborne Disease, Foodborne/Waterborne Disease, Vectorborne Disease, Zoonotic Disease

Airborne Disease: Coccidioidomycosis (Valley Fever)

Foodborne/Waterborne Disease: Cholera, E. coli, Schistosomiasis

Vectorborne Disease: Fly-borne Disease, Mosquito-borne Disease, Tick-borne Disease

Fly-borne Disease: Trypanosomiasis

Mosquito-borne Disease: Chikungunya, Dengue, Malaria, Rift Valley Fever, Viral Encephalitis, Viral Encephalitis, West Nile Virus

Tick-borne Disease: Relapsing Fever, Other Tick-borne Disease

Tick-borne Disease (other): borreliosis

Zoonotic Disease: Nipah Virus

Mental Health Effect/Stress: Mood Disorder, Stress Disorder

Intervention:

strategy to prepare for or reduce the impact of climate change on health

A focus of content

Medical Community Engagement: ☑

resource focus on how the medical community discusses or acts to address health impacts of climate change

A focus of content

Mitigation/Adaptation: ☑

mitigation or adaptation strategy is a focus of resource

Adaptation, Mitigation

Resource Type: ☑

format or standard characteristic of resource

Review

Resilience: ☑

capacity of an individual, community, or institution to dynamically and effectively respond or adapt to shifting climate impact circumstances while continuing to function

A focus of content

Timescale: ☑

time period studied

Time Scale Unspecified